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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named
Inventor : Jian Wu et al.

Appln. No. : 10/780,177

Filed : February 16, 2004

For : METHOD AND APPARATUS FOR
CONSTRUCTING A SPEECH
FILTER USING ESTIMATES OF
CLEAN SPEECH AND NOISE

Docket No.: M61.12-0592

Group Art Unit: 2631

Examiner:

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I HEREBY CERTIFY THAT THIS PAPER IS BEING
SENT BY U.S. MAIL, FIRST CLASS, TO THE
COMMISSIONER FOR PATENTS, P.O. BOX 1450,
ALEXANDRIA, VA 22313-1450, THIS

17th DAY OF February, 2005

PATENT ATTORNEY

Sir:

The patents or publications listed on the enclosed PTO Form-1449 are submitted pursuant to 37 C.F.R. § 1.97. Copies of the patents or publications cited are enclosed, except as waived by the Official Gazette notice of August 5, 2003 regarding copies of U.S. Patents and Published Applications.

TIME OF FILING

The information disclosure statement is being filed:

1. X with the application or within three months of the filing date of the application or date of entry into the national stage of an international application or before the mailing date of a first Office action on the merits, whichever event occurs last. In accordance with 37 C.F.R. § 1.97(b), no statement or fee is required.
2. _____ after the time period specified in paragraph 1 above, but before the mailing date of a final action under 37 C.F.R. § 1.113 or notice of allowance under 37 C.F.R. § 1.311. Therefore, in accordance with 37 C.F.R. § 1.97(c), submitted herewith is:

(check either A or B below)

- A. ☐ a statement as specified in 37 C.F.R. § 1.97(e).
 - B. ☐ the fee set forth in 37 C.F.R. § 1.17(p) for submission of an information disclosure statement under 37 C.F.R. § 1.97(c).
3. ☐ after the mailing date of either a final action under 37 C.F.R. § 1.113 or a notice of allowance under 37 C.F.R. § 1.311, whichever occurs first, but before payment of the issue fee. Therefore, Applicant petitions for consideration and submits herewith:
- A. a statement as specified in 37 C.F.R. § 1.97(e);
 - B. the petition fee set forth in 37 C.F.R. § 1.17(p).

STATEMENT

(only used if No. 2(A) or No. 3 above is checked)

The person(s) signing below certify

(check appropriate paragraph)

☐ that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement. 37 C.F.R. § 1.97(e)(1).

OR

☐ that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the person signing the certification after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this statement. 37 C.F.R. § 1.97(e)(2).

METHOD OF PAYMENT

 X No fee is required.

 Attached is a check in the amount of \$.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123. A duplicate copy of this communication is enclosed.

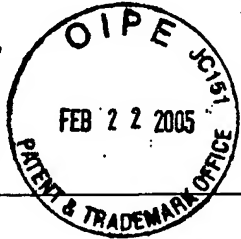
Respectfully submitted,

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FORM PTO-1449	Atty. Docket No.: M61.12-0592	Appl. No.: 10/780,177
 <p>LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT</p>	First Named Inventor:	
	Jian Wu et al.	
	Filing Date	Group Art:
	February 16, 2004	2631

U.S. PATENT DOCUMENTS

Examiner Initial	Document No.	Date	Name	Class	Sub Class	Filing Date If Appropriate
AA	09/999,576	11/15/01	Attias et al.			
AB	5,148,489	09/1992	Erell et al.	704	226	
AC	5,924,065	07/1999	Eberman et al.	704	231	
AD	6,026,359	02/2000	Yamaguchi et al.	704	256	
AE	6,067,517	05/2000	Bahl et al.	704	256	
AF	6,188,976	02/2001	Ramaswamy et al.	704	9	
AG	6,202,047	03/2001	Ephraim et al.	704	256	
AH	6,633,842	10/2003	Gong, Yifan	704	233	
AI	10/772,937	11/26/03	Kristjansson et al.			
AJ	09/812,524	03/20/01	Acero et al.			

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

AK	Agarwal, A., et al., "Two-Stage Mel-Warped Wiener Filter for Robust Speech Recognition," Proceeding IEEE-ASRU Workshop 1999.
AL	Deng, L., et al., "Recursive Noise Estimation Using Iterative Stochastic Approximation for Stereo-Based Robust Speech Recognition," Proceeding IEEE ASRU Workshop 2001, Italy.
AM	Deng, L., et al., "Incremental Bayes Learning with Prior Evolution for Tracking Nonstationary Noise Statistics from Noisy Speech Data," Proceeding IEEE ICASSP 2003, Hong Kong, China.
AN	Frey, B.J., et al., "ALGONQUIN: Iterating Laplace's Method to Remove Multiple Types of Acoustic Distortion for Robust Speech Recognition," Proceeding Eurospeech 2001.
AO	Kristjansson, T., et al., "Joint Estimation of Noise and Channel Distortion in a Generalized EM Framework," Proceeding IEEE ASRU Workshop 2001, Italy.
AP	Sanka, A., et al., "A Maximum-Likelihood Approach to Stochastic Matching for Robust Speech Recognition," IEEE Translation on Speech and Audio Processing, Vol. 4, no. 3, pages 190-202, 1996.
AQ	Y. Ephraim, "Gain-Adaptive HMMs for Recognition of Clean and Noisy Speech," IEEE Trans, Signal Processing, vol. 40, June 1992, pp. 1303-1316.

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DATE CONSIDERED:

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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AR	A.P. Varga and R.K. Moore, "Hidden Markov Model Decomposition of Speech and Noise," in Proceedings of the International Conference on Acoustics, Speech and Signal Processing, IEEE Press., pp. 845-848 (1990).
AS	S. Boll, "Suppression of Acoustic Noise in Speech Using Spectral Subtraction," IEEE Transactions on Acoustics, Speech and Signal Processing, Vol. 27, pp. 114-120 (1979).
AT	L. Deng, A. Acero, M. Plumpe & X.D. Huang, "Large-Vocabulary Speech Recognition Under Adverse Acoustic Environments," in Proceedings of the International Conference on Spoken Language Processing, pp. 806-809 (October 2000).
AU	A. Acero, L. Deng, T. Kristjansson and J. Zhang, "HMM Adaptation Using Vector Taylor Series for Noisy Speech Recognition," in Proceedings of the International Conference on Spoken Language Processing, pp. 869-872 (October 2000).
AV	Y. Ephraim, "Statistical-Model-Based Speech Enhancement Systems," Proc. IEEE, 80(10):1526-1555 (1992).
AW	M.S. Brandstein, "On the Use of Explicit Speech Modeling in Microphone Array Application," In Proc. ICASSP, pp. 3613-3616 (1998).
AX	A. Dembo and O. Zeitouni, "Maximum A Posteriori Estimation of Time-Varying ARMA Processes from Noisy Observations," IEEE Trans. Acoustics, Speech and Signal Processing, 36(4): 471-476 (1988).
AY	P. Moreno, "Speech Recognition in Noisy Environments," Carnegie Mellon University, Pittsburgh, PA, pp. 1-130 (1996).
AZ	Y. Ephraim and R. Gray, "A Unified Approach for Encoding Clean and Noisy Sources by Means of Waveform and Autoregressive Model Vector Quantization," IEEE Transactions on Information Theory, Vol. 34, No. 4, pp. 826-834 (July 1988).
BA	Y. Ephraim, "A Bayesian Estimation Approach for Speech Enhancement Using Hidden Markov Models," IEEE Transactions on Signal Processing, Vol. 40, No. 4, pp. 725-735 (April 1992).
BB	"Noise Reduction" downloaded from http://www.ind.rwth-aachen.de/research/noise_reduction.html , pp. 1-11 (10/3/01).
BC	A. Acero, "Acoustical and Environmental Robustness in Automatic Speech Recognition," Department of Electrical and Computer Engineering, pp. 1-141 (September 13, 1990).
BD	Frey, Variational Inference and Learning in Graphical Models (undated).

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BE	R. Neal and G. Hinton, "A View of the EM Algorithm that Justifies Incremental, Sparse, and Other Variants," pp. 1-14 (1993).
BF	J. Lim and A. Oppenheim, "All-Pole Modeling of Degraded Speech," IEEE Transactions on Acoustics, Speech, and Signal Processing, Vol. ASSP-26, No. 3, pp. 197-210 (June 1978).
BG	M. Seltzer, J. Droppo, and A. Acero, "A Harmonic-Model-Based Front End for Robust Speech Recognition," <i>Eurospeech</i> , 2003.
BH	J. Tabrikian, S. Dubnov, and Y. Dickalov, "Speech Enhancement by Harmonic Modeling Via Map Pitch Tracking," <i>In Proc. of ICASSP</i> , pp. 549-552, 2002.
BI	B.J. Frey, T. Kristjansson, L. Deng, and A. Acero, "Learning Dynamic Noise Models from Noisy Speech for Robust Speech Recognition," <i>Advances in Neural Information Processing (NIPS)</i> , 2001.
BJ	T. Kristjansson, <i>Speech Recognition in Adverse Environments: A Probabilistic Approach</i> , Ph.D. thesis, University of Waterloo, Ontario, Canada, April 2002.

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